Homologous vs analogous structures worksheet answers

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Key Observation from Galapagos Islands

Table 1 Species on Remote Islands

Observations from the Galapagos Islands	Darwin's hypotheses regarding remote islands
many species of plants, birds, insects, and, in some cases, reptiles	Only these kinds of organisms are able to reach remote islands by crossing large expanses of open ocean.
no native amphibians and very few land mammals	Amphibians and most mammals are unable to cross open ocean and will not be found on remote islands.
many unique species found nowhere else on Earth	Over time, ancestral species have evolved into new geographically isolated species.
unique species most closely resemble species on the nearest continental land mass	Unique species are descendents of ancestral species from the nearest continental land masses and will exhibit some similarities.

Homologous vs analogous structures worksheet. What are the differences between analogous and homologous structures. Homologous vs analogous examples.

Have you ever thought about how different kinds of animals have body parts that work in similar ways? Like bats and bees? Both creatures have wings - even though their bodies are structured very differently. The key to understanding these differences lies in knowing what homologous and analogous structures are. In this article, we'll talk about each type of structure and discuss the similarities and differences between them. What Are Homologous Structures? Homologous structures are similar structures in related organisms. The most important thing to remember about homologous structures is that they share common ancestry. In other words, only organisms that are somehow related to each other can have homologous structures. For example, a chimpanzee's arm and a human's arm are homologous structures. Both sets of arms have a similar structure and use and chimpanzees and humans share a common ancestor. What Are Analogous Structures? Analogous structures are similar structures in unrelated organisms. These structures are similar because they do the same job, not because they share common ancestry. For example, dolphins and sharks both have fins, even though they aren't related. Both species developed fins because of how (and where) they live. What's the Difference Between Homologous and Analogous Structures? Homologous and analogous structures have several key differences. Let's take a look at them: Homologous Structures Analogous Structures Shared ancestry Similar internal structure May look different externally No shared ancestry Similar function May look similar externally Homologous Structures Example A great example of homologous structures are the wings of a bat and the arms of a human. Bats and humans are both mammals, so they share a common ancestry. Both a bat's wing and a human's arm share a similar internal bone structure, even though they look very different externally. The wing and the arm also perform different functions - wings help bats fly, while arms help humans interact with their world in a very different way. Analogous Structures Example A great example of analogous structures are a bat's wing and a bee's wing. Bats and bees do not share common ancestry, so the structures cannot be homologous. Both bat wings and bee wings serve a common purpose - helping bats and bees fly! The structures look similar on the outside, too. However, their internal structures are very different - bat wings have a bony structure with muscles, while bee wings are membranous extensions. Homologous and Analogous Structures - Key Takeaways Many animals have body parts that look similar, even though they don't share common functionality. Other animals have body parts that look totally different, but have a shared background. Here's the difference between homologous and analogous structures: Homologous structures are structures that may look or function differently from related organisms. Analogous structures are structures that look and function similarly from unrelated organisms. What's Next? Currently taking Biology and need help with other bio topics? Learn about photosynthesis, enzymes, cell theory, and what and how the cell membrane and endoplasmic reticulum work. Are you considering taking the SAT subject tests in a subject like biology? Make sure you get the inside information on the test before you make your decision. If you're a freshman, sophomore, or junior, you might consider adding AP classes to your schedule. Here's a complete list of AP courses and tests to help you choose classes that are perfect for you. Want to know the fastest and easiest ways to convert between Fahrenheit and Celsius? We've got you covered! Check out our guide to the best ways to convert Celsius to Fahrenheit (or vice versa). Need more help with this topic? Check out Tutorbase! Our vetted tutor database includes a range of experienced educators who can help you polish an essay for English or explain how derivatives work for Calculus. You can use dozens of filters and search criteria to find the perfect person for your needs. If you're seeing this message, it means we're having trouble loading external resources on our website. If you're behind a web filter, please make sure that the domains *.kastatic.org and *.kasandbox.org are unblocked. Structures with similar anatomy, morphology, embryology, and genetics, but different functions are called homologous structures. Structures with similar, but different anatomical structures with the same function are called Analogous structures. In this article, we will talk about the Homologous and Analogous structures, their facts, and differences. Homologous and Analogous StructuresHomologous and analogous structures are often difficult to understand. It is really important to understand the importance in comprehending the similarities and differences between the various organisms. Scientists make use of animals for biological processes and drug treatments without extensive and potentially dangerous experimentation on humans with their knowledge. The structures which have the same anatomy, morphology, embryology and genetics but are dissimilar in their functions are called homologous structures. Structures that are externally similar but are still dissimilar doing the same function are known as analogous structures. Homologous StructuresHomologous structures can be defined as the organs or skeletal elements of animals and organisms that, by virtue of their similarity, belong to a common ancestor. These structures do not necessarily have to look exactly the same, or have the same function.The word homologous is derived from the Greek words 'homos', which means same, and 'logos,' which means relation. As a result, it literally means "sharing the same relation." Homologous structures are structures found in related organisms that were passed down from a common ancestor. In the descendants, these structures may or may not have the same function. The homologous structure evolved as a result of adaptation to various environments.Analogous StructuresAnalogous structures are similar structures that evolved independently into two living organisms for the same purpose. The term analogous structures comes from the root word Analogy, which means where two different things are the basis of their similarities.Analogous structures are structures that perform the same function but are found in creatures with different ancestral origins and represent different evolutionary lines. Furthermore, they do not share a place. Despite this, they can evolve body parts or organs that perform the same function but in different ways. The analogous structure evolved as a result of different species' adaptation to similar environments.The wings of a bird, a bat, or an insect, for example, have similar structures.Difference Between Homologous vs Analogous StructuresHomologous StructureAnalogous StructureIt has similar anatomyIt has dissimilar anatomyIt is dissimilar in their functionsIt is similar in their functionsIt is inherited from a common ancestorIt is not inherited from ancestorsIt develops in related speciesIt develops in unrelated speciesIt is a result of divergent evolutionIt is a result of convergent evolutionIt is developed as a result of the adaptation to a different environmentIt is developed as a result of the adaptation to a similar environment Example of Homologous Structures Some of the examples of Homologous Structures are the four limbs of tetrapods. Mice, crocodiles, birds and other animals and birds with four limbs form perfect examples of Homologous structures. As the ancestors of these tetrapods evolved in the universe with four limbs, so as their descendants have inherited the same feature. However, not all characters can be called homologies. For example, birds and bats both have wings and if compared to mice and crocodiles, they do not have. Does that anyway mean that birds and bats are more closely related to one another than to mice and crocodiles? No. When we examine bird wings and bat wings closely, we see that there are much more differences.Bat wings consist of the cover of skin that is stretched between the bones of the fingers and arm. Bird wings consist of feathers which are extended all along the arm. The dissimilarities of these structures suggest that wings of birds and wings of bats were not inherited from common ancestors. Example of Analogous StructuresBecause of their separate evolutionary origins, birds and bats are analogous. Analogies are the result of convergent evolution. Surprisingly, though bird and bat wings are analogous as wings, as forelimbs they are homologous. Birds and bats are known to have not inherited their wings from a common ancestor who were with wings, but they did inherit forelimbs from a common ancestor with forelimbs. Pictorial Depiction of Homologous and Analogous Structures(Imagewillbeuploadedsoon)Points to RememberHomologous structures exist in organisms that have a common ancestor, so they are monophyletic. Analogous structures are found in organisms that do not have a common ancestor.Analogous structures always have similar or identical functions, while homologous structures are not always the case. Conclusion To conclude, anatomical structures in animals or plants frequently different in their functions due to DNA mutations or epigenetic regulation that results in homologous structures in future offspring if the change is favorable for the survival of that organism. Alternatively, changes in gene expression of two completely unrelated species can eventually result in very similar anatomy and physiology in certain tissues. Such structures are analogous, or homoplastic, as they are derived from differing ancestors, but have very similar functions. The closeness of species can be determined to a particular ancestor by looking at the mutations of the DNA level that are typically compared between organisms, where those with fewer changes in the DNA sequences are considered to be more closely related. Importantly, these changes in DNA sequences were passed onto offspring if they were favorable enough to allow the organism to survive long enough to be able to reproduce, a concept known as natural selection.

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